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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,398	02/11/2005	Soichi Kuwahara	075834.00506	6054
33448	7590	06/17/2010		
ROBERT J. DEPKE LEWIS T. STEADMAN ROCKEY, DEPKE & LYONS, LLC SUITE 5450 SEARS TOWER CHICAGO, IL 60606-6306			EXAMINER LEBRON, JANNELLE M	
			ART UNIT 2861	PAPER NUMBER
			MAIL DATE 06/17/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/524,398

Applicant(s)

KUWAHARA ET AL.

Examiner

JANNELLE M. LEBRON

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 12, 13, 16 and 20-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 12, 13, 16 and 20-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/07/2010 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 12, 13, 16 and 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi et al. (US 2004/0036723) in view of Hayashizaki et al. (JP 2000-062158).

Eguchi et al. discloses the following claimed limitations:

- **Claim 1:** a liquid ejection apparatus comprising:
 - a line head [10 in fig. 21] having a plurality of liquid ejection unit heads [1 in fig. 21], each unit head having a plurality of ink ejecting nozzles [1a in

fig. 21; paragraphs 0008 and 0128] and two or more ink ejecting elements [heating elements 13] associated with each ink ejecting nozzle [paragraph 0069], the ink ejecting nozzles being arranged in groups by unit heads such that each unit head includes a single group of ink ejecting nozzles [as seen in fig. 21];

- principal control means [main controller in fig. 6] for separately controlling members of each group of ink ejecting nozzles based upon a default operating condition for the respective unit head as manufactured such that substantially the same current values are supplied to the individual ink ejecting elements for each group, wherein current that is supplied to each of the ink ejecting elements of a nozzle in the group is either the same or a different value as set by the principal control means [equal amounts of currents provided to the connected heating resistors; Abstract and paragraph 0096]; and
 - auxiliary control means [sub operation controller in fig. 6] for modifying the default operating condition for at least one group of ink ejecting nozzles relative to the remaining groups of ink ejecting nozzles such that currents different from the default condition are supplied to the ink ejecting elements of the at least one group of ink ejecting nozzles [different current provided and direction of ink ejected (and therefore different operating condition; Abstract and paragraphs 0031, 0096 and 0097; see in fig. 4C);
- **Claim 12:** wherein the liquid ejection apparatus comprises:

- a liquid chamber [liquid cell 12 in figs. 1-2B; paragraph 0072] for accommodating liquid to be ejected at each ink ejecting nozzle.
- **Claim 13:** wherein the liquid ejection apparatus comprises:
 - a liquid chamber [liquid cell 12 in figs. 1-2B; paragraph 0072] for accommodating liquid to be ejected associated with each ink ejecting nozzle;
 - a heating element [resistor 13] arranged within the liquid chamber for generating bubbles in the liquid contained in the liquid chamber by supplying energy [paragraph 0072];
 - wherein the ink ejecting elements are juxtaposed in each liquid chamber in an arranging direction of the liquid ejection unit heads, and
 - further comprising a circuit having a switching element [transistors] connected between the heating elements [as seen in fig. 6].
- **Claim 16:** a liquid ejection method for controlling the ejection of ink from a line head [10 in fig. 21] arranged by longitudinally juxtaposing a plurality of liquid ejection unit heads [1 in fig. 21], each unit head having a plurality of ink ejecting nozzles [1a in fig. 21; paragraphs 0008 and 0128] including two or more ink ejecting elements [heating elements 13] associated with each ink ejecting nozzle, the ink ejecting nozzles being arranged in groups by unit heads such that each unit head includes a single group of ink ejecting nozzles [as seen in fig. 21], the liquid ejecting method comprising the steps of:

- providing principal control means [main controller in fig. 6] for separately controlling ejection of liquid droplets from each group of ink ejecting nozzles based upon a default operating condition for the respective unit head as manufactured such that substantially the same current values are supplied to the individual ink ejecting elements for each group, wherein current that is supplied to each of the ink ejecting elements of a nozzle in the group is either the same or a different value as set by the principal control means [equal amounts of currents provided to the connected heating resistors; Abstract and paragraph 0096]; and
 - selectively enabling auxiliary control [sub operation controller in fig. 6] for modifying the default operating condition for at least one group of ink ejecting nozzles relative to the remaining groups of ink ejecting nozzles such that currents different from the default condition are supplied to the ink ejecting elements of the at least one group of ink ejecting nozzles [different current provided and direction of ink ejected (and therefore different operating condition; Abstract and paragraphs 0031, 0096 and 0097; as seen in fig. 4C].
- **Claims 20 and 21:**
 - further comprising detection means / step for detecting landing positions of ink ejected by said ink ejecting nozzles in a test pattern [as seen in fig. 22A and 22B] and using the results of the detection to determine the

amount of modification to apply via the auxiliary control means [the angle of deflection is modified for each unit head as seen in fig. 4A-4C].

- **Claims 22 and 23:**

- Wherein said at least one group of ink ejecting nozzles utilized said modified operating condition on all subsequent print operations [paragraphs 0161 and 0162].

- **Claims 24 and 25:**

- wherein said storage means is a memory element [paragraph 0162].

- **Claims 26 and 27:**

- further comprising a plurality of binary deflection control inputs [paragraph 0257 and 0258] for determining, step by step, an amount of deflection to be applied to a group of ink ejecting nozzles, and an analog deflection amplitude control input [paragraph 0206 and claim 27] for varying the value of each step.

Eguchi et al. fails to expressly disclose the following claimed limitations:

- **Claims 1 and 16:** further wherein the principal control means operates to generate a principal ink ejection direction that is altered relative to other ink ejecting heads depending upon a detected result.

Hayashizaki et al. disclose the following claimed limitations:

- **Claims 1 and 16:** further wherein the principal control means operates to generate a principal ink ejection direction that is altered relative to other ink ejecting heads depending upon a detected result [Abstract; the apparatus prints a pattern and uses a sensor to analyze the pattern and define (i.e. generate/determine) an ejection angle of a drop in different printheads (if an angle is determined, then a direction is as well)].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Eguchi invention to include means for generating a principal ink ejection direction based upon a detected result as taught by Hayashizaki et al. for the purpose of being able to determine which unit head needs to be adjusted or repaired in order to obtain a better printing quality and a more effective printing operation.

Response to Arguments

4. Applicant's arguments with respect to claims 1 and 16 have been considered but are moot in view of the new ground(s) of rejection. Please note that Hayashizaki et al. disclose means for generating a principal ink ejection direction based upon a detected result.

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JANNELLE M. LEBRON whose telephone number is

(571)272-2729. The examiner can normally be reached on Monday thru Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW LUU/
Supervisory Patent Examiner, Art
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